

CLAIMS

1. A method for making a block or gradient final (co)polymer comprising a step of radically polymerizing a mixture of ethylenically unsaturated monomers to an iodine atom-containing intermediate polymer, wherein the iodine atom-containing intermediate polymer comprises at least 50 mole% of methacrylate monomers, in the presence of c) a radical precursor and d) I₂ or a iodine chain transfer agent, followed by a step of radically polymerizing a mixture of ethylenically unsaturated monomers in the presence of a) a radical precursor and b) the iodine atom-containing intermediate polymer of the first step.
2. A method for making a block or gradient final (co)polymer comprising a step of radically polymerizing a mixture of ethylenically unsaturated monomers in the presence of a) a radical precursor and b) an iodine atom-containing intermediate polymer or a mixture of iodine atom-containing intermediate polymers, wherein the iodine atom-containing intermediate polymer comprises at least 50 mole% of methacrylate monomers and is obtainable from a polymerization of ethylenically unsaturated monomers.
3. The method according to claim 1 or 2 wherein the mole ratio iodine atom-containing intermediate polymer(s) b) : radical precursor a) is $> 0.1n$, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.
4. The method according to any one of preceding claims 1-3 wherein the temperature during the polymerization step(s) is lower than 130°C, preferably lower than 110°C, even more preferably lower than 90°C, and most preferably lower than 70°C.

5. The method according to any one of preceding claims 1-4 wherein the polymerization step(s) is (are) performed in the presence of an epoxide-containing compound.

5 6. The method according to claim 5 wherein the mole ratio epoxide : iodine atom-containing intermediate polymer b) is > 0.01 , preferably > 0.05 .

7. A method according to any one of claims 2-6 wherein the iodine atom-containing intermediate polymer is obtainable by polymerization of a mixture of ethylenically unsaturated monomers comprising at least 50 mole% of methacrylate monomers in the presence of c) a radical precursor and d) iodine or an iodine chain transfer agent.

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8. The method of claim 1 or 7 wherein the mole ratio I_2 : radical precursor c) is between $0.05n$ and $0.5n$, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

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9. The method of claim 1 or 7 wherein the mole ratio sulfonyl iodide : radical precursor c) is $> 0.1n$, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

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10. A method according to any one of preceding claims 1-9 wherein the iodine atom-containing intermediate polymer has a molecular weight of less than 10,000.

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11. A method according to any one of preceding claims 1-10 wherein the final polymer is reacted further, with the iodine atom in the final polymer being removed, preferably by nucleophilic reaction, by heating, and/or by reaction with a radical-generating compound, optionally under reducing conditions.

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12. Block or gradient (co)polymer obtainable by the method of any one of preceding claims 1-11.

5 13. Use of block or gradient final (co)polymer prepared according to any one of claims 1-11 in a film-forming composition, preferably a coating composition, adhesive or ink formulation, more preferably in automotive or industrial coating compositions.

10 14. Use of block or gradient final (co)polymer prepared according to any one of preceding claims 1-11 as rheology additive, surfactant, dispersant, adhesion promoter and/or flow improvement additive.